

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number
WO 2004/047421 A2

(51) International Patent Classification⁷: **H04N**

(21) International Application Number:
PCT/US2003/036177

(22) International Filing Date:
14 November 2003 (14.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/426,239 14 November 2002 (14.11.2002) US
60/477,416 10 June 2003 (10.06.2003) US
60/492,544 5 August 2003 (05.08.2003) US

(71) Applicant (for all designated States except US): **DONNELLY CORPORATION** [US/US]; 414 East Fortieth Street, Holland, MI 49423 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BINGLE, Robert,**

L. [US/US]; 3102 Crestbrooke Drive, Holland, MI 49424 (US). **CAMILLERI, Joseph** [US/US]; 11537 Eagle Way, Brighton, MI 48114 (US). **WHITEHEAD, Peter, J.** [GB/US]; 345 Sandcastle Drive, Holland, MI 49424 (US). **SCHOFIELD, Kenneth** [GB/US]; 4793 Crestridge Court, Holland, MI 49423 (US).

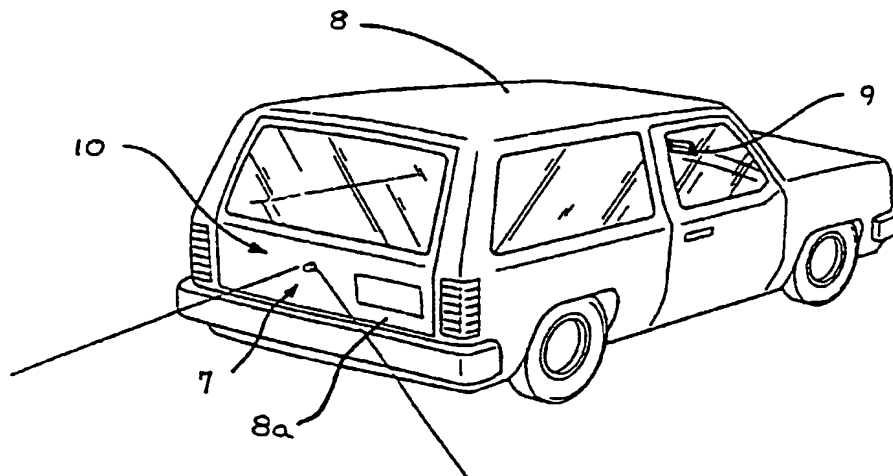
(74) Agents: **VAN DYKE, GARDNER, LINN & BURKHART, LLP** et al.; 2851 Charlevoix Drive, SE, Ste. 207, P.O. Box 888695, Grands Rapids, MI 49588-8695 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: IMAGING SYSTEM FOR VEHICLE



(57) Abstract: An imaging system (7) for a vehicle (8) includes a camera module (10) positionable at the vehicle and a control (9b). The camera module includes a plastic housing (16) that houses an image sensor (18), which is operable to capture images of a scene occurring exteriorly of the vehicle. The control is operable to process images captured by the image sensor. The portions of the housing may be laser welded or sonic welded together to substantially seal the image sensor and associated components within the plastic housing. The housing may include a ventilation portion (15) that is at least partially permeable to water vapor to allow water vapor to pass therethrough while substantially precluding passage of water droplets and/or other contaminants. The housing (110) may be movable at the vehicle between a stored position and an operational position, where the image sensor may be directed toward the exterior scene.

WO 2004/047421 A2